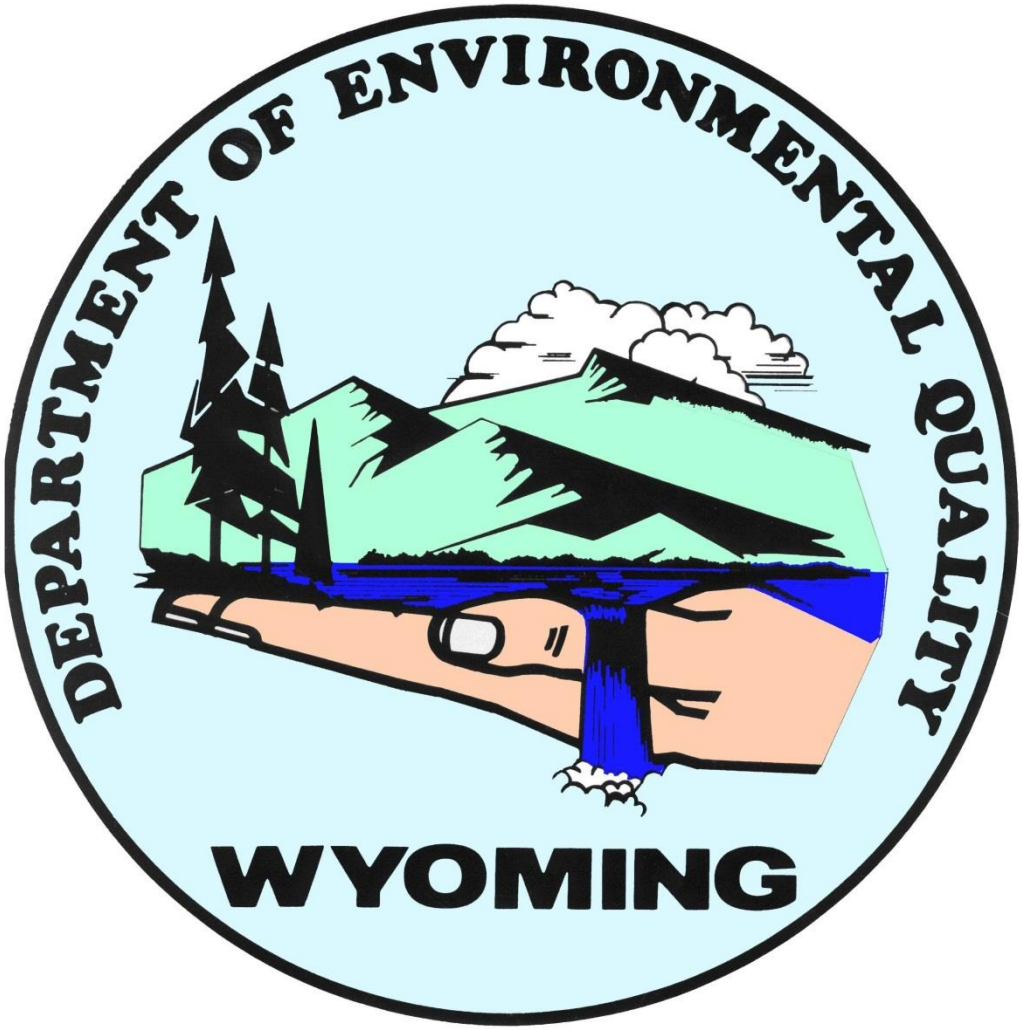
DEPARTMENT OF ENVIRONMENTAL QUALITY
LAND QUALITY DIVISION
GUIDELINE NO. 12A



STANDARDIZED RECLAMATION PERFORMANCE BOND COST CALCULATION METHODS
for
NonCOAL SMALL SCALE MINING OPERATIONS

INTRODUCTION

This document is a Guideline only. Its contents are not to be interpreted by the applicant/operator or Wyoming Department of Environmental Quality (WDEQ) staff as mandatory. This Guideline intends to assist applicants/operators in understanding and attaining the requirements of the Wyoming Environmental Quality Act (ACT) and Land Quality Division (WDEQ/LQD) Rules and Regulations addressing bonding topics. The WDEQ/LQD will selectively and periodically publish updated versions of the Cost Calculation Methods.

APPLICABLE WEQA STATUTES AND LQD RULES AND REGULATIONS

This is a general summary of items from the ACT.

WS §35-11-417: Outlines some general provisions applying to initial bond and renewal bond values. This statute outlines the concept of Partial Bond Release.

WS §35-11-418: Outlines acceptable bond vehicles.

WS §35-11-423: Outlines procedures for bond release and establishes a minimum five (5) year bond period for permittees.

WS §35-11-411(d): Authorizes the WDEQ Director to establish the bond amount based upon information submitted in the annual report, an inspection and other materials.

These items in WDEQ/LQD Rules and Regulations apply to bonding.

Noncoal Rules and Regulations, Chapter 1, Section 2(i) defines bond.

Noncoal Rules and Regulations, Chapter 6 outlines definitions and procedures for the self-bond program.

Noncoal Rules and Regulations, Chapter 8, Section 3 require a bond for exploration by drilling.

Noncoal Rules and Regulations, Chapter 9, Section 2 discusses bond requirements for conversion of a non-coal Small Mine Permit to a Regular Mine Permit.

Noncoal Rules and Regulations, Chapter 12 details information on Letters of Credit used as a bond vehicle.

I. COST EXPLANATION FOR ITEMS USED IN STANDARDIZED RECLAMATION BOND COSTS

Equipment sizes (loaders, trucks, scrapers, motor graders, etc.) were selected based on types of equipment contractors typically use during reclamation. Ownership and operation costs were determined by using EquipmentWatch (formerly DataQuest). A standard efficiency factor of 0.83 is incorporated into all production calculations, with the exception of scarification calculations where the efficiency factor used was 0.75. The general efficiency factor accounts for a fifty-minute work hour as recommended by many cost references. Labor and benefit costs were obtained from the 2015 State Building Construction Prevailing Wages (February 2015).

II. SITE RECLAMATION TASKS

A. Topsoil / Overburden respread using Cat 627 Push-Pull Scraper. The capacity of the can (bowl) is assumed to be 17 cubic yards, operating on a nearly level surface, and an operator efficiency of 83%. To determine a volume in cubic yards using replacement depth commitments, the following formula is used:

Volume = {(Replacement Depth in Inches / 12) x (# of acres x 43,560)} / 27

Average One-Way Travel Distance	Cost per cubic yard
500 feet	$0.72
750 feet	$0.79
1,000 feet	$0.87
1,250 feet	$0.93
1,500 feet	$1.00
1,750 feet	$1.06
2,000 feet	$1.12
2,250 feet	$1.19
2,500 feet	$1.25
2,750 feet	$1.31
3,000 feet	$1.37

B. Material Movement with a Dozer

Push Distance	Cat D6 (175 hp) - $/yd^3		Cat D8 (305 hp) - $/yd^3	
	Flat (0% Gr.)	Downslope (-10% Gr.)	Flat (0% Gr.)	Downslope (-10% Gr.)
50	$0.26	$0.22	$0.19	$0.16
100	$0.35	$0.29	$0.30	$0.25
150	$0.45	$0.38	$0.41	$0.34
200	$0.57	$0.47	$0.53	$0.44
250	$0.65	$0.54	$0.73	$0.61
300	$0.82	$0.63	$0.88	$0.73
350			$1.10	$0.92
400			$1.39	$1.16

C. Highwall Reduction with a Dozer

Highwall height in ft.	Cat D6 (175 HP) - $/ft. of HW	Cat D8 (305 HP) - $/ft. of HW
5	$0.12	$0.09
10	$0.50	$0.36
15	$1.13	$0.82
20	$2.00	$1.45
25	$3.13	$2.27
30	$4.51	$3.27

- Quarries operations should include blasting costs of $0.859/BCY for slope reduction.

D. Material Movement with a Loader (Cat 980) and Truck (Cat 725) Fleet

Average One-Way Travel Distance	Cost per cubic yard
500 feet	$0.95
1,000 feet	$1.00
1,500 feet	$1.07
2,000 feet	$1.14
2,500 feet	$1.21
3,000 feet	$1.28
3,500 feet	$1.35
4,000 feet	$1.41
4,500 feet	$1.48
5,000 feet	$1.55
6,000 feet	$1.62

E. Ripping of a pit floor with a Dozer

These costs are based on an assumption that a dozer will be equipped with a three-shank ripper with a three-foot shank spacing. The average pass would result in an equivalent width of nine feet, assuming a three-foot shank spacing is maintained.

a. CAT D6, $166.77 per acre

b. CAT D8, $241.76 per acre

F. Final Grading of the Reclaimed Surface using a Cat 140 Motor Grader

Final grading costs are calculated based on the grader operating in 2nd gear and finish grade being attained at one-half the blade width. The unit cost for this operation equates to $65.91 per acre.

G. Scarification of a compacted surface using a Cat 140 Motor Grader

The cost is based on the assumption that a grader will be operated in 1st gear and is equipped with a five-shank ripper with a 21-inch shank spacing. The average pass would result in an equivalent width of 9.33 feet, assuming the 21-inch spacing is maintained between passes. The unit cost for this operation equates to $57.80 per acre.

H. Culvert Removal including fill material.

This task assumes excavation using a common backhoe/loader combination hauling a distance of roughly 1000 feet to dispose of fill material. Fill volume estimate is assumed to be two (2) cubic yards per foot of culvert. Culvert removal cost equates to $13.20 foot.

I. Seeding Costs (seed plus application)

Seeding costs are estimated at $300.00 per acre (based on a generic seed mix of shrubs, grasses, and forbs). This cost should be used in calculations unless the landowner has a specific seed mix for the area that will reduce or increase the cost of reclamation. Under such conditions, the seed cost would be added to an application cost of $100.00 per acre to derive the total seeding cost.

J. Miscellaneous Equipment Costs and Capabilities.

a. Case 590 / Cat 430 with a 1.1 cubic-yard loader bucket and 0.33 cubic-yard backhoe bucket - $82.41 / hour. Backhoe production is approximately 19 cubic-yards per hour, which equates to $4.34 / cubic-yard.

b. Cat 980 Front-End Loader with a 5.25 cubic yard bucket - $155.26 / hour. When using the loader to spread stockpiled material, the estimated costs are:

One-Way Travel Distance (feet)	Unit Cost ($ / cubic-yard)
100	$0.31
200	$0.40
300	$0.46
400	$0.52

K. Pioneer (Cut/Fill Perpendicular to the Slope) Road Reclamation
Reclamation is assumed to be performed with a Cat 320 excavator. The estimated cost per foot of road is $1.57 and includes smoothing of the replaced material.

L. Well and Drill Hole Abandonment

The operator should see Guideline 12, Appendix L as a guide to estimate costs associated with this task.

III. Minimum Bonding Costs

If the estimated cost of a reclamation task, with the exception of those falling under Items II (H) and (L) is less than $200.00, then a lump sum fee of $200.00 should applied to the task rather than the calculated estimated cost.

IV. Bond Release

The minimum period between completion of reclamation and application for bond release on reclaimed areas is five (5) years (growing seasons. Early bond release is possible after two full growing seasons provided the Operator has obtained a “Statement of Satisfactory Reclamation” from the Landowner and the operator adequately demonstrates to the

WDEQ/LQD that vegetation is self-renewing. This demonstration of self-renewing vegetation may require vegetation sampling as required under Guideline 2.

Once an area has been seeded, the Operator is eligible for up to 75% release of the bond required for the affected land. However, the overall bond for the operation should not be less than $10,000.00. Unit area reclamation costs are highly variable and for simplicity the WDEQ/LQD will assume the unit area reclamation costs of $2,000.00 per acre associated with Limited Mining Operations is applicable. Therefore, the minimum reclamation maintenance level after partial bond release is **$500.00 per acre**.

V. Contingency Fees

Miscellaneous bond costs, such as mobilization, de-mobilization, and profit will likely be higher for small, remote projects. The WDEQ/LQD feels that the miscellaneous costs on these small operations should range from 25% on projects in excess of $500,000.00, to 35% on projects of $250,000.00, and 45% on projects of $50,000 and less. The table below has been developed to assist in the estimate of a Contingency Fee.

Site Cost Reclamation Estimate ($)	Contingency Fee (%)
≤ 50,000	45
100,000	42
150,000	40
200,000	37
250,000	35
300,000	33
350,000	31
400,000	29
450,000	27
≥ 500,000	25

VI. Maps

This Guideline requests that acreages Reclamation Performance Bond estimates be tied to a map at a scale that adequately illustrates the location of various features (e.g., stockpiles) and the land surface status (i.e., reclaimed, topsoiled, disturbed, etc.). The map should be titled, identify the Permit Number, Operator address, have a north arrow, scale identified, show legal subdivisions and the Permit Area Boundary.

Please also see WDEQ/LQD Guideline #6, Page 14, Section V (Maps and Aerial Photos)